

CLAIMS

What is claimed is:

1. An error-handling framework for business process transactions, comprising:
 - an error-handling routine that facilitates fault correction and compensation in response to a fault associated with a business transaction;
 - a context construct that associates a unit of work with the error-handling routine; and
 - an execution engine that performs selective compensation of the unit of work upon invocation of the error-handling routine according to a set of predefined rules provided by the error-handling framework, the set of predefined rules defining propagation of error-handling in nested units of work.
2. The error-handling framework of claim 1, the unit of work being one of a transaction and a plurality of transactions.
3. The error-handling framework of claim 1, the error-handling routine comprising an exception handler and a compensation handler, the exception handler determines if a fault occurs and performs fault compensation if the unit of work has not completed, and the exception handler calling the compensation handler to perform compensation if the unit of work has completed.
4. The error-handling framework of claim 1, further comprising a plurality of contexts associated with a plurality of units of work having at least one hierarchical relationship between units of work, and an exception handler and a compensation handler associated with a respective context, the execution engine propagates compensation handler from outer contexts to inner contexts and exception handlers from inner contexts to outer contexts.

5. The error-handling framework of claim 1, the context construct provides support to define custom ordering of compensation handlers.

6. The error-handling framework of claim 1, the execution engine stores a snapshot of the unit of work upon completion of the unit of work, the snapshot containing data used by a compensation handler associated with the unit of work.

7. The error-handling framework of claim 1, the error-handling framework provides at least one of default exception handlers and default compensation handlers for contexts without custom error-handling routines.

8. The error-handling framework of claim 7, the execution engine invoking the at least one of default exception handlers and default compensation handlers for contexts without custom error-handling routines.

9. The error-handling framework of claim 1, the error-handling routine comprising at least one exception handler that detects a fault and calls a compensation handler, the compensation handler calls at least one other compensation handler.

10. The error-handling framework of claim 1, the unit of work comprising an in-line service call, the execution engine executing the unit of work and halting the unit of work during execution of the in-line service an resuming execution of the unit of work upon completion of the in-line call.

11. The error-handling framework of claim 10, the error-handling framework provides default error-handling to the in-line service if custom handling is not provided, the execution engine executing one of custom error-handling and default error-handling associated with the in-line service upon detection of a fault.

12. The error-handling framework of claim 1, the execution engine uses functionality within the error-handling framework to determine success and failure of the unit of work when invoking the error-handling routine.

13. A system for executing a business workflow process, comprising:
a schedule defining a business workflow process, the schedule having a business transaction grouping;
a context associated with the business transaction grouping and an exception handler and at least one compensation handler associated with the context, the exception handler defining the ordering of the at least one compensation handler; and
an execution engine that executes the schedule and invokes the exception handler upon detection of a fault, the exception handler performs fault correction of the business transaction grouping if the business transaction grouping has not completed, and the exception handler calls the compensation handler to perform compensation of the business transaction grouping if the business transaction grouping has completed.

14 The system of claim 13, at least one compensation handler comprising a first compensation handler that passes a plurality of parameters to a second compensation handler.

15. The system of claim 1, the execution engine stores state data associated with the execution of the transaction grouping, the state data optimized is to reflect state data used by the at least one compensation handler associated with transaction grouping.

16. The system of claim 13, further comprising a plurality of transaction groupings having at least one hierarchical relationship, and an exception handler and a compensation handler associated with a respective transaction grouping, the execution engine propagates the execution of the compensation handlers from outer

transaction groupings to inner transaction groupings and exception handlers from inner transaction groupings to outer transaction groupings.

17. The system of claim 13, at least one of the exception handler and the at least one compensation handlers being default handlers invoked by the execution engine upon detection of the absence of a custom handler.

18. A method for creating a business workflow schedule, the method comprising:

defining a unit of work of a business workflow process;
associating a context with the unit of work;
creating an exception handler associated with the context; and
creating a compensation handler associated with the context, the compensation handler having at least one passable parameter.

19. The method of claim 18, the unit of work being one of a transaction and a plurality of transactions.

20. The method of claim 18, further comprising defining a plurality of transactions forming the business workflow schedule and associating a context with respective transactions of the plurality of transactions.

21. The method of claim 18, at least one of the plurality of transactions having a hierarchical relationship with at least one other of the plurality of transactions.

22. The method of claim 18, further comprising creating a plurality of compensation handlers associated with the plurality of transactions and defining the order of invocation of the plurality of transactions in response to a fault.

23. A method of executing a business workflow schedule, the method comprising:

executing a unit of work of a business workflow process defined by a business workflow schedule;

storing compensation state data if the unit of work completes execution, the compensation state data providing information to be used by a compensation handler associated with the unit of work;

invoking an exception handler if a fault occurs in the business workflow schedule; and

invoking a compensation handler if the unit of work has completed execution, the compensation handler utilizing the compensation state data to compensate for the unit of work and the exception handler compensating data associated with the unit of work if the unit of work has not completed execution.

24. The method of claim 23, further comprising executing a plurality of units of work defined by the business workflow schedule, the plurality of units of work having at least one hierarchical relationship.

25. The method of claim 24, the plurality of units of work having respective exception handlers and compensation handlers.

26. The method of claim 25, further comprising associating default exception handlers to units of work without custom exception handlers and associating default compensation handlers to units of work without custom compensation handlers.

27. The method of claim 25, further comprising propagating compensation handlers from outer units of work to inner units of work and exception handlers from inner units of work to outer units of work in hierarchical relationships.

28. The method of claim 23, further comprising executing a plurality of compensation handlers in an order defined in the exception handler.

29. The method of claim 23, further comprising halting execution of the unit of work in response to an in-line service call, executing the service and resuming execution of the unit of work upon completing execution of the service.

30. The method of claim 23, further comprising executing a succeed component to determine if the unit of work has completed prior to invoking the compensation handler.

31. A computer readable medium having computer executable components comprising:

a plurality of components defining a business transaction scheduling language that a user can employ to define a business transaction process, the plurality of components including a context component that can be used to associate a unit of work with an exception handler and a compensation handler; and

a plurality of components defining an error-handling framework, the error-handling framework having components for defining custom exception handlers and custom compensation handlers, the customer compensation handlers comprising at least one passable parameter.

32. The computer readable medium of claim 31, the error-handling framework having at least one component for defining ordering of execution of compensation handlers.

33. The computer readable medium of claim 31, further comprising an execution engine component that utilizes the error-handling framework to provide default handlers to contexts that do not have custom handlers associated with the contexts.

34. The computer readable medium of claim 31, further comprising an execution engine component that utilizes the error-handling framework to propagate compensation handlers from outer contexts to inner contexts and propagate exception handlers from inner contexts to outer contexts.

35. The computer readable medium of claim 31, further comprising an execution engine component that stores compensation data of a portion of a business process associated with a context upon completion of the execution of the portion of the business process, the compensation data provided to the compensation handler upon invocation of a fault.

36. A business workflow system, comprising:
means for defining a schedule of a business workflow process, the schedule having a plurality of business transaction groupings;
means for defining exception handlers and compensation handlers for corresponding business transaction groupings;
means for associating the exception handlers and compensation handlers to the corresponding business transaction groupings; and
means for defining the ordering of the invocation of compensation handlers in response to a fault of the business workflow process.

37. The system of claim 36, means for propagating compensation handlers and exception handlers for business transaction groupings having hierarchical relationships.

38. The system of claim 36, means for providing default handlers in the absence of custom handlers.

39. The system of claim 36, means for storing compensation data upon completion of execution of a business transaction grouping.